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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/590,290	08/23/2006	Takeo Tokiai	294806US0PCT	6806
22850	7590	05/13/2011	EXAMINER	
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P. 1940 DUKE STREET ALEXANDRIA, VA 22314			STANLEY, JANE L	
			ART UNIT	PAPER NUMBER
			1767	
			NOTIFICATION DATE	DELIVERY MODE
			05/13/2011	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/590,290	TOKIAI, TAKEO	
	Examiner	Art Unit	
	JANE L. STANLEY	1767	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 April 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Applicant's request for continued examination (RCE) filed **29 April 2011** has been fully considered. Applicant's claim amendments and arguments filed with the after final of **29 March 2011** have now been entered and considered. As per Applicant's filed claim amendments of 29 March 2011 **claims 1-2 and 4-9** are pending, wherein: **claim 1** has been amended, **claims 2 and 5-6** are as originally filed, **claims 4 and 7-9** are as previously presented and **claim 3** has been cancelled.

Continued Examination Under 37 CFR 1.114

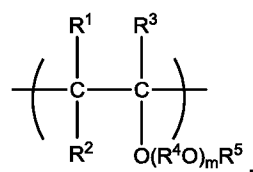
A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on **29 April 2011** has been entered.

Claim Rejections - 35 USC § 103

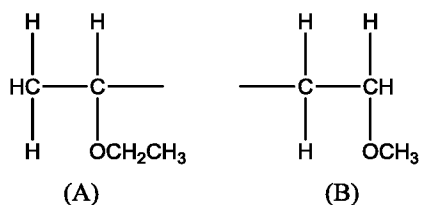
The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-2 and 4-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Egawa et al. (US 5,518,643) in view of Kaneko et al. (US 5,801,132).

Regarding claims 1-2 and 4-7, Egawa teaches a lubricating oil composition comprising a refrigerant and a polyvinyl ether compound having units expressed by the general formula of:



wherein R^1 , R^2 , R^3 are H or a hydrocarbon group of C1-8, R^4 is a bivalent hydrocarbon group of C2-10, R^5 is a hydrocarbon group of C1-10 and m is 0-10 (abstract). Egawa further teaches that R^5 may be the same or different between the constituting units (col 4 ln 43-44), hydrocarbons of C8 or less are preferable and that when m is zero, alkyl groups of C1-6 are particularly preferred (col 5 ln 65 to col 6 ln 1). Egawa teaches that R^1 , R^2 , R^3 are preferably hydrogen (col 5 ln 9-12). Egawa further teaches examples of the polyvinyl ether compounds having end units of



which meets the instant claim 1 limitations of p being an integer of 1 or more and q being an integer of 1 or more, of R^5 representing a methyl group and R^6 representing an ethyl group, and of R^3 and R^4 representing a hydrogen atom, as well as the instant claim 2 limitations of $p/(p+q)$ is 0.1 or more (see Example preparations 1-3).

Egawa et al. teaches the refrigerants to include hydrofluorocarbons or hydrochlorofluorocarbons (abstract) including pentafluoroethane and other conventional

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Flon refrigerants (col 9 ln 5-20) but does not specifically teach a C1-C8 hydrocarbon compound. However, Kaneko et al. teaches compositions comprising similar polyvinyl ether polymers (col 2 ln 46; col 4 ln 4-38; col 5 ln 46-52; col 7 ln 12-19 and 27-33) and refrigerants (col 15 ln 53 to col 16 ln 13). Kaneko et al. teaches hydrofluorocarbons including pentafluoroethane (col 15 ln 62) and hydrocarbons such as propane, cyclopropane, butane, isobutane and pentane (col 16 ln 5-6) to be refrigerant equivalents. Kaneko et al. and Egawa et al. are analogous art because they are both concerned with the same field of endeavor, namely refrigerant oil compositions comprising a polyvinyl ether base oil and a refrigerant. In view of the recognition by Kaneko et al. that hydrofluorocarbon refrigerants and the aforementioned hydrocarbon refrigerants are equivalent and interchangeable, it would have been obvious to one of ordinary skill in the art to substitute the hydrofluorocarbon with a hydrocarbon refrigerant and thereby arrive at the present invention. Case law holds that the mere substitution of an equivalent (something equal in value or meaning, as taught by analogous prior art) is not an act of invention; where equivalency is known to the prior art, the substitution of one equivalent for another is not patentable (See *In re Ruff* 118 USPQ 343 (CCPA 1958; MPEP 2144.06)).

Egawa teaches kinematic viscosity values for the polyvinyl ether compounds alone but does not specifically teach that the *mixture* viscosity of the refrigerating oil composition comprising both a refrigerant (A) and polyvinyl ether base oil (B) is 0.1 mm²/s or more, or 0.5 mm²/s or more when measured at 90 °C and 2.3 MPa. However, Egawa teaches that the polyvinyl ether compound has a kinematic viscosity of 5 to 1000

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cSt at 40 °C before mixing with the refrigerant (col 8 ln 5-14). Egawa is silent as to the pressure at which the measurement(s) was/were obtained. However, as the polyvinyl ether base oil and refrigerant made obvious by Egawa in view of Kaneko are the polyvinyl ether and hydrocarbon claimed and are present in the claimed amounts, it is implicit that the polyvinyl ether base oil and refrigerant would have this property, absent evidence to the contrary.

Egawa does not specifically teach that the solubility of the refrigerant (instant A) in the polyvinyl ether base oil (instant B) is 40 mass% or less, 2 to 40 mass%, 2 to 30 mass% or 5 to 25 mass% when measured at 40 °C and 1.2 mPa. However, as the polyvinyl ether base oil and refrigerant made obvious by Egawa in view of Kaneko are the polyvinyl ether and hydrocarbon claimed and are present in the claimed amounts, it is implicit that the polyvinyl ether base oil and refrigerant would have this property, absent evidence to the contrary.

Regarding claim 8, Egawa in view of Kaneko renders obvious the composition set forth above. Egawa further teaches the average molecular weight of the polyvinyl ether compound is from 150 to 4,000 (col 8 ln 14-16).

Regarding claim 9, Egawa in view of Kaneko makes obvious the composition set forth above.

Egawa does not specifically teach the polyvinyl ether compound (instant component B) to have an oxygen atom content of 10 mass% or more. However, Egawa teaches a 150 to 4,000 MW polyvinyl ether with the formula units set forth above including the combination of methoxy and ethoxy units (see above). There exists a

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plurality of situations in which the polyvinyl ether of Egawa will intrinsically have an oxygen atom content of 10 mass% or more.

Response to Arguments

The 35 U.S.C. 103(a) rejection of **claims 1-2 and 4-9** as being unpatentable over Egawa et al. (US 6,261,474) in view of Kaneko et al. (US 5,801,132) is withdrawn as a result of Applicant's amendments to claim 1. Applicant's arguments (see Remarks/Arguments pages 4-7, filed 29 March 2011) have been fully considered and were found persuasive with respect to the teachings of Egawa, specifically Egawa's failure to teach q as an integer of 1 or more. Applicant's further arguments to Egawa (US 6,261,474) in view of Kaneko (US 5,801,132) have been fully considered but are moot in view of the new grounds of rejection as set forth above. Please note that Egawa US 5,518,643 used in the new rejection set forth above was previously made of record by the Examiner in the Final rejection mailed 29 November 2010.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JANE L. STANLEY whose telephone number is (571)270-3870. The examiner can normally be reached on Mon.-Thurs. 7:30 am - 5 pm, alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on (571) 272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Peter F. Godenschwager/
Examiner, Art Unit 1767

/JLS/